Cisco Cloud Services Platform 5000 Series

Contents

The Cisco Cloud Services Platform (CSP) 5000 Series is a turnkey, open Network Functions Virtualization (NFV) platform based on x86 and RHEL Kernal-based Virtual Machine (KVM). It is optimized for the networking data plane and for operational simplicity, and can be managed with orchestration or as standalone network platform.

Product Overview

Cisco Cloud Services Platform (CSP) 5000 Series platforms are x86 Linux Kernel-based Virtual Machine (KVM) software and hardware platforms for the data center, regional hub, and colocation Network Functions Virtualization (NFV). The platforms enable enterprise IT teams or service providers to quickly deploy any Cisco or third-party network virtual service with Cisco's Network Services Orchestrator (NSO) or any other northbound management and orchestration system. Or they can be used standalone through a simple, built-in native web user interface, a Command-Line Interface (CLI), a Representational State Transfer (REST) API, and NETCONF/YANG interfaces. The Cisco CSP 5000 Series comes in either 1-rack-unit (Figure 1) or 2RU form factors to fit the requirements of Virtual Network Functions (VNF) and network-service chains in network and compute.
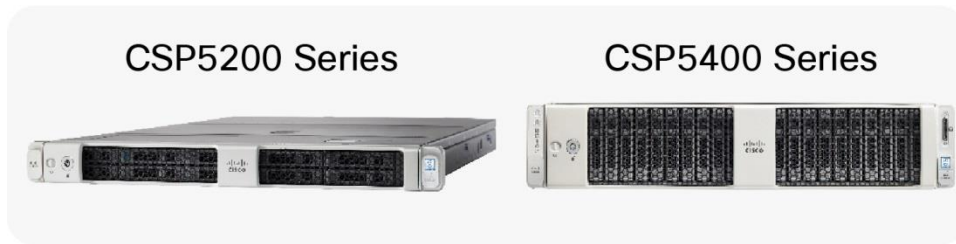

Figure 1.
Cisco CSP 5200 (1 RU) and CSP 5400 (2RU)

The CSP 5000 Series can be deployed within data centers, regional hubs, colocation centers, the WAN edge, the DMZ, and even at a service provider's Point of Presence (PoP), hosting various Cisco and third-party VNFs (see Figure 2).
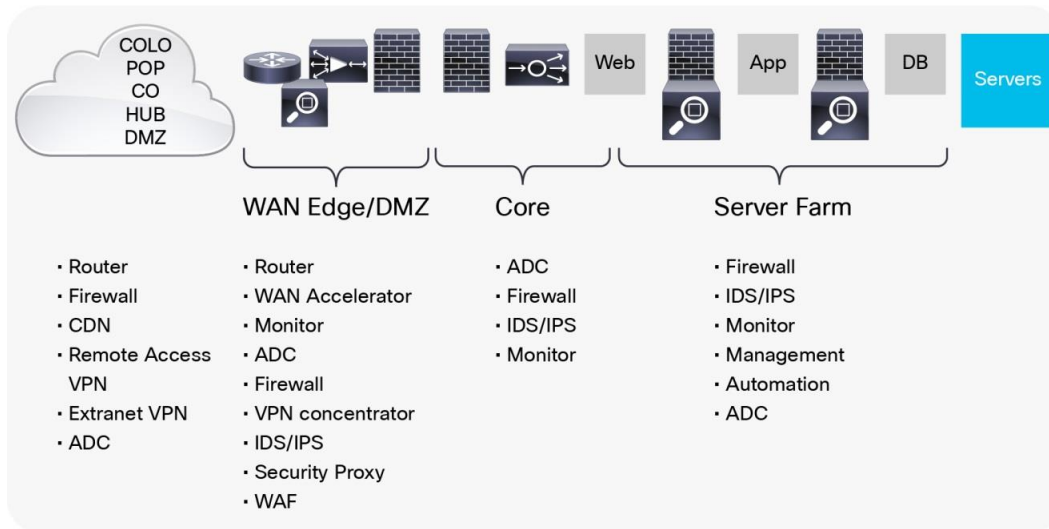

Figure 2.
Where to Deploy the CSP 5000 Series in the Network

Features and Benefits

Table 1 outlines key features and benefits of the CSP 5000 Series.

Table 1.   Features and Benefits

Feature	Benefit
Single Root I/O Virtualization (SR-IOV), Open vSwitch Data Plane Development Kit (OVS-DPDK)	The optimized data plane provides near-line rates for SR-IOV-enabled VNFs and provides high throughput with OVS DPDK interfaces.
Uniform web, CLI, and REST API	The CSP 5000 supports NETCONF/YANG, which enables consistent behavior across different interfaces.
CLI interface	Cisco IOX CLI interface reduces training and learning time.

Prominent Feature/Differentiator/Capability

Most applications have been virtualized over the past decade, and now the same trend is occurring in network services. With this trend, often referred to as network functions virtualization or NFV, network services can be deployed and managed much more flexibly, because they can be implemented in a virtualized environment using x86 computing resources instead of purpose-built dedicated hardware appliances. The CSP 5000 Series can assist you in making this technology transition.

In data centers and colocation facilities today, network services primarily run on purpose-built hardware appliances. This approach is inflexible in that you are locked into a single function on each physical network appliance for the life of the appliance, resulting in under-utilized resources. You often have to wait weeks or even months for new hardware.

Some of today's challenges for data center teams deploying virtual network services include:

- Keeping pace with the server team. Can the network, security, and load balancer teams deploy a virtual network service within minutes?
- Commercial hypervisor product and support costs
- OpenStack complexity, which is still too complex for many organizations
- OpenStack overhead, which requires five to eight hosts just to get started
- Little or no access to a VMware vCenter Server or Microsoft System Center VMM and computing resources
- Lack of a tool set to manage virtual services
- Lack of Linux OS expertise
- Low comfort level with dedicated hardware appliances

The CSP 5000 Series addresses these requirements with a solution that provides the agility of software with the performance of hardware to reduce both time and expense. From the edge of your network to your server farm or point of presence, you can virtualize services with the CSP 5000 to optimize your resource use, hosting several virtual services per node and extending your equipment lifecycle through reuse. And faster deployment of new virtual services can help you better support your users and applications.

Some benefits of the CSP 5000 include:

- Operational simplicity

- Turnkey appliance that can be up and running in five minutes

- Open NFV platform for both Cisco and third-party VNFs

- Network-friendly CLI syntax and intuitive GUI

- Increased automation and operational agility

Platform Support/Compatibility

The CSP 5000 series supports a wide variety of Cisco and third-party Virtual Network Functions (VNFs) from third-party vendors, including firewalls, load balancers, and other value-added services. Some supported VNFs include:

- Cisco Cloud Services Router (CSR) 1000V virtual router

- Cisco IOS® XRv 9000 Router

- Cisco Adaptive Security Virtual Appliance (ASAv)

- Cisco Firepower™ NGFW Virtual

- Cisco Prime® Virtual Network Analysis Module (vNAM)

- Cisco Virtual Wide Area Application Services (vWAAS)

- Cisco Web Security Virtual Appliance (WSAv)

- Cisco Virtual Security Gateway (VSG) for Cisco Nexus® 1000V Series Switch deployments

- Cisco Virtual Supervisor Module (VSM) for Cisco Nexus 1000V Series Switch deployments

- Cisco Data Center Network Manager (DCNM)

Several third-party VNFs can be run on the CSP 5000, but for the best experience customers should deploy VNFs that are certified as a part of the Cisco third-party VNF ecosystem. For information on the Cisco third-party VNF ecosystem and which VNFs are certified and supported on the CSP 5000 visit:

https://www.cisco.com/c/dam/en/us/solutions/collateral/enterprise-networks/enterprise-network-functions-virtualization-nfv/nfv-open-ecosystem-qualified-vnf-vendors.pdf

Product Specifications

Table 2 outlines the product specifications for the CSP 5000 Series.

Table 2.   Product Specifications

Item	Specification
Chassis	1 1RU based on the Cisco UCS® C220 M5 Rack Server 1 2RU based on the Cisco UCS C240 M5 Rack Server
Processors	2x Intel® Xeon E5-2600 v3 and v4 Series processors

Item	Specification
Memory	16-GB DDR4-2666-MHz 32- GB DDR4-2666-MHz Up to 24 DIMM slots
Network interface cards	Intel i550 LAN on motherboard (LOM) (2 x 10G Base T) Intel i350 PCIe (4 x 1 Gigabit Ethernet) Intel X520 dual-port 10G SFP+ adapter Intel X710 quad-port 10G SFP+ NIC Intel XL710 dual-port 40G QSFP+ NIC
Networking	PCIe passthrough Single-root I/O virtualization (SR-IOV): • Virtual Ethernet bridge (VEB) • Virtual Ethernet port aggregator (VEPA) Open Virtual Switch (OVS) with DPDK (Data Plane Development Kit) Port channeling
PCIe slots	1RU platform: Up to 2x PCI Express (PCIe) 3.0 slots 2RU platform: Up to 6x PCI Express (PCIe) 3.0 slots
Hard drives	SFF HDDs or SSDs Hot-swappable, front-accessible drives 1RU platform: Up to 8x drives 2RU platform: Up to 24x drives
RAID	Cisco 12-gigabit modular RAID controller with 2-GB cache Cisco 12-gigabit modular RAID controller with 4-GB cache
Cisco Integrated Management Controller (IMC)	Integrated Baseboard Management Controller (BMC) IPMI 2.0 compliant for management and control 1x 10/100/1000 Ethernet out-of-band management interface CLI and web GUI management tool for automated, lights-out management KVM
Management and operations	GUI CLI REST API NetConf/Yang Secure Shell Version 2 (SSHv2) Syslog Simple Network Management Protocol (SNMP) Multiple virtual serial consoles (for supporting the Cisco IOS XRv 9000 Router and other VNFs)
Cisco FlexFlash	2 x 64-GB Secure Digital (SD) cards
Internal USB	16-GB USB flash drive
Rail kit	Ball-bearing rail kit
Power supplies	1RU platform: Cisco UCS 770W AC power supply for rack server (2) 2RU platform: Cisco UCS 1050W AC power supply for rack server (2)
VNF disk types	IDE and VirtIO

Item	Specification
VNF image types	*.iso *.ova *.qcow/qcow2 *.raw *.vmdk
Access control	Ability to disable any unused interfaces Option to dedicate CSP 2100 management port Option to dedicate VNF management port Management Access Control List (ACL) Role-Based Access Control (RBAC) Authentication, Authorization, and Accounting (AAA) • TACACS+ • RADIUS
Automation	Day-zero config file support Ability to save service templates REST API and NetConf/Yang Cisco Network Services Orchestrator (NSO) integration
Storage	Local (HDDs or SSDs) NFS • Support loading a VNF image from an NFS location • Allocate NFS disk location for VM creation Support for multiple disks (local or NFS)
Clustering	Pool resources to n number of nodes Scale-out on demand Automate resource management GUI supports up to 10x nodes
Backup	Appliance-level running configuration backup and restore (local or NFS storage) VNF data backup and restore (local or NFS storage)

Ordering Information

The Cisco CSP 5000 is orderable and shipping, hardware and software options are as follows:

Table 3.   System and Ordering Information

PID/SKU	CSP-5216	CSP-5228	CSP-5436	CSP-5444	CSP-5456
Rack Size	1RU		2RU		
CPU Cores	16	28	36	44	56
On Board Processors	2				
Redundant Power (110/220 VAC)	1540 Watt Total (2x770) included		2100W (2x1050) included		

PID/SKU	CSP-5216	CSP-5228	CSP-5436	CSP-5444	CSP-5456
Memory 12 x 2 DIMM = 24 Slots	Configure 16 or 32 GB DIMMS in quantities of; 4,6,8,10,12,14,16,18,20,22 or 24 • 16GB DIMM options; Maximum 384GB • 32GB DIMM options; Maximum Max 756GB				
Disk slot(small form)	10 (useable 8)		24		
Disk Options	1.2TB(HDD) or 960GB (SSD)		1.2TB(HDD) or 960GB (SSD)		
Disk Capacity	1.2˙8/2=4.8TB(HDD) or 3.8TB(SSD)		14.4 T(HDD) or 11.5TB(SSD)		
On Board NICs (LOM)	2x10 GbE				
Max NIC ports	14 (2x4+4+2)		30(6x4+4+2)		
PCIe NIC Slots	2 slots 2x10G X520 or 4x10G X710		6 slots 2x10G X520 or 4x10G X710		
VIC Slots	1				

Table 4.   Virtual interface Card (VIC) and Network Interface Card (NIC) Options

Virtual Interface Card (VIC) 4x10/25 GbE SFP28 (VIC 1457)	4x10/25 GbE SFP28
Network Interface Card (NIC) 1GbE (i350)	Y (Optional Add-in) 4x1GbE RJ45
Network Interface Card (NIC) 2x10GbE SFP+ (i520)	Y
Network Interface Card (NIC) 4x10GbE SFP+ (i710)	Y

To place an order, visit the Cisco Ordering webpage. To download software, visit the Cisco Software Center.

The CSP 5000 series is included in the standard Cisco Technology Migration Program (TMP). Refer to the guide and contact your local Cisco account representative for program details.

The CSP 5000 series have a 90-day limited liability warranty.

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